OUTDOOR MEDIUM VOLTAGE SWITCHGEAR - UP TO 24kV

A division of ACTOM Pty Ltd

ACTOM

Formerly ALSTOM South Africa

ACTOM Outdoor Medium Voltage Switchgear

Rhino substations up to 24 kV

- The Rhino outdoor substation has been specifically designed to house the SBV4 and SBV24 range of vacuum switchgear so this type of equipment may be installed outdoors without the necessity of building a conventional brick type substation.
- The SBV4 – 12 kV is a compact range of switchgear available in single busbar arrangement with a continuous rating of up to 2000A and a rated short circuit capability up to and including 31,5 kA for 3 seconds.
- The SBV5 – 12kV is interchangeable with the SBV4 and shares the same housing enclosure but uses an advanced magnetic actuator mechanism for applications where a large number of switching operations are required, for example, motor operation and power factor correction device switching. This range is available in single busbar arrangement with a continuous rating of up to 1 250 A and a rated short circuit capability up to and including 25 kA for 3 seconds.
- The SBV24 – 24 kV is a compact range of switchgear available in single busbar arrangement with a continuous rating of up to 1 250 A and a rated short circuit capability up to and including 25 kA for 3 seconds.
- All SBV4, SBV5 and SBV24 medium voltage switchgear have been tested at KEMA or NETFA.
- This range of switchgear is ideally suited for fitting into outdoor type steel enclosures due to the compact nature of the switchgear. Virtually any combination or number of panels may be accommodated, dependent only on the limitations of handling and transporting the complete outdoor assembly.
- The outdoor enclosures can be manufactured from mild steel plate or 3CR12 corrosion resistant metal, dependent on the user's requirements. All steelwork is powder coated using the most up to date static deposition and baking techniques.
- Enclosure bases are of the RSJ type for rigidity and are hot dip galvanised for enhanced corrosion resistance.
- Voltage transformers and battery tripping units are mounted in an end compartment together with the relay protection, metering and indication devices normally associated with an indoor MV switchboard.
- All enclosure doors in front of the switch panels are designed to open into a horizontal position where the inside of the door is used as the runner to withdraw the circuit breaker truck.
- All doors are fitted with a tamper proof locking system to prevent vandalism and access to the MV compartments.
- Generous cable access space is available at the rear of the enclosure for bottom entry power cables.

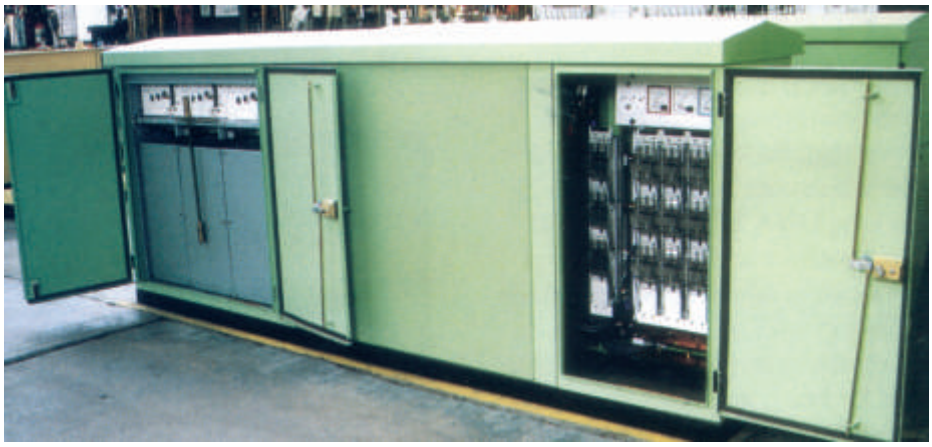
Rhino outdoor substation.

Rhino outdoor substation suitable for systems up to 24 kV.

Miniature substations up to 24 kV

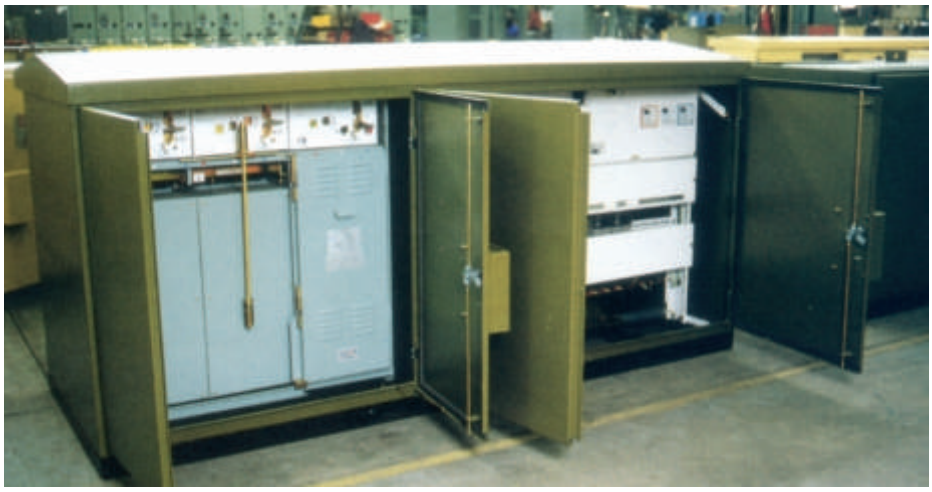
- ACTOM miniature substations have been developed over many years as a cost effective method of reticulating power to residential, industrial and development areas where the essential components are combined in a single robust enclosure suitable for outdoor applications.
- Miniature substations generally consist of a steel enclosure housing an MV ring main switch, a step-down transformer with ratios typically 22 000/420 V or 11 000/420 V and a low voltage distribution compartment.
- The MV compartment may contain one of the following which are generally purchaser specified:
  - 3-way oil insulated isolator ring main unit type K3
  - 4-way oil insulated isolator ring main unit type K4
  - 3-way oil insulated isolator/air insulated fuse ring main unit type K3/AF
  - 4-way oil insulated isolator/air insulated fuse ring main unit type K4/AF
  - 3 or 4-way gas insulated ring main unit

A fibreglass miniature substation.



Front view of a type A miniature substation.

Side view of a type A miniature substation.



*Type B miniature substation with all compartment doors open.

- The transformer compartment contains a sealed type oil immersed step down trans - former of the low loss type with aluminium windings in accor - dance with SABS 780 and is normally supplied with an oil level indicator and an off circuit tap switch. These transformers can be supplied on request with dual inputs, for example, to operate from either 11 000 V or 6600V medium voltage systems.
- The LV compartment contains circuit breakers, HRC fuses, metering and instruments to specification.
- Miniature substations are norm- ally available in type A or type B configurations dependent on the specification.
- The units are factory assem- bled bled and tested and despatched as complete units and are suitable for installation in public areas, such as on residential pavements, near shopping complexes and in industrial parks.
- Miniature substation fitted with gas insulated ring main units having an internal arc classifica- tion IAC AB in accordance with SANS 62271-202 are available.

Type B miniature substation suitable for systems up to 24 kV.

Miniature substation with IAC.

K-range oil switchgear up to 12 kV

K3 AF with fuse chamber open.

- The K-range of low oil volume switchgear provides a versatile solution for indoor and outdoor MV switching applications where both extensible and non-extensible configurations are required, for use with distribution equipment such as transformers and cable networks.
- The K-range switches are of the fault make/load break type where either fuse switches or isolators or combinations of these are required, depending on the application.
- The versatility of this range of switchgear is enhanced in that non-extensible units can be supplied with up to four circuits in very compact dimensions whereas the typical ring main unit is limited to three circuits.
- The non-extensible units are particularly well suited for fitting into high voltage compartments of miniature substations and outdoor steel kiosks.
- Personnel safety is the key feature of the K-range of switchgear in that the equipment has substantial mechanical interlocking devices to ensure that users follow the correct procedures during operation and guard against tampering.
- Spring loading of switch mechanisms ensures that the speed of operation of all contacts is independent of the operator.
- Integral fault make earthing switches are provided.
- Access to HRC fuses on tee-off circuits is restricted by interlocks to ensure that both sides of the fuses are earthed.
- All ring isolators are fitted with fully interlocked test shutters to enable access for cable testing. Fuse switches do not have this feature.
- All major compartments are fitted with pressure relief vents where pressures, created during an internal arc fault, would be directed away from the operator.
- The volume of oil required for the K-range ring main units is substantially less than other comparable ring main units.
- All operations on the K-range units, including operation of the earthing switches, cable test shutters and main cable access, are from the front of the unit.

K3 AF with additional outdoor enclosure.

- Replacement of air insulated HRC fuses is simple, safe and rapid via robust safety interlocks from the front of the unit.
- All units employ independent manual spring type mechanisms which are simple, robust and reliable.
- The designs incorporate low component counts, self aligning switch blades and a minimum amount of maintenance.
- The K-range of switchgear has been designed to satisfy a diversity of applications, for both indoor and outdoor use in extensible and non-extensible configurations.
- The cable chambers are designed in various versions to accommodate different types of MV cables and different insulation mediums, such as heat shrink insulation and insulating compounds.
- K-range units are manufactured, tested and certified in accordance with IEC 420 (1990) and NRS 006.
- ACTOM Switchgear complies with ISO 9000 quality requirements and is certificated to SABS/ISO 9001.
- All K-range switchgear is fully designed and manufactured in South Africa.
- The K-range switchgear is tested and certified for operation on systems:
  - Voltages up to 12 kV
  - Rated insulation level 12 kV
  - Impulse level (peak) 95 kV
  - A.C. withstand 1min (rms) 28kV
  - Rated current 630 A
  - Rated fault current (3 sec) 20kA
  - Max fuse rating (T-off) 90A

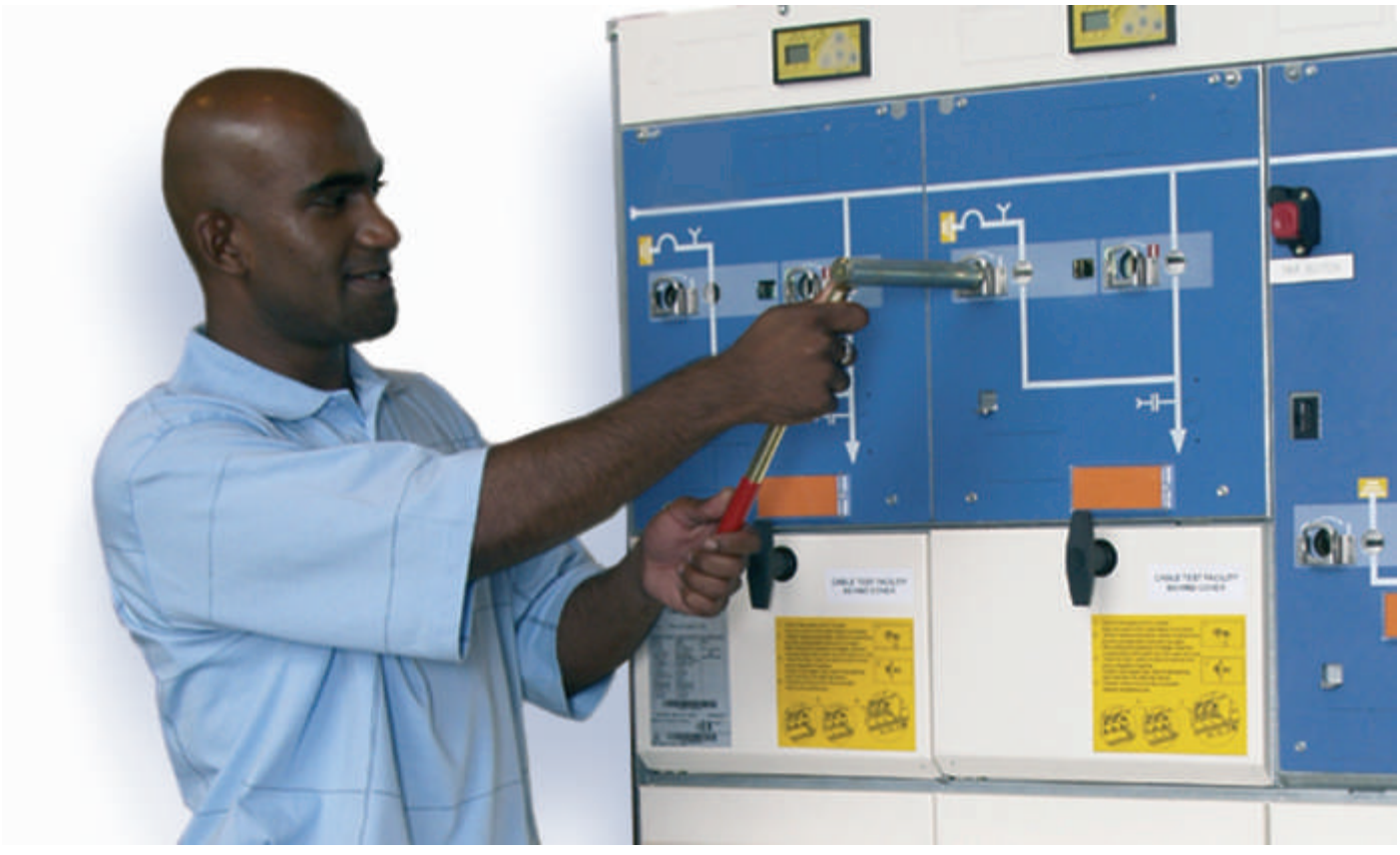
FBX Gas Insulated Ring Main Unit up to 24 kV

- FBX-C 12kV and 24kV switchgear is available as classical non-extensible ring main units, with 2 to 4 switching units.
- FBX-E is the extensible version, with 1 to 4 switching units, which are arranged in a common gas-filled compartment.
- The functional units of FBX-E can be arranged in any order, without gas handling, to form the required multi-panel switchgear arrangement.
- With its modular concept and options including motorized switching devices and remote control modules, FBX is especially well-suited for the increasing automation of secondary distribution networks.
- Both FBX-C (non-extensible) and FBX-E (extensible) versions can be equipped with load-break fault-make switch disconnectors (C), switch fuse combinations (T1), 630A vacuum circuit-breakers (T2), busbar risers (R) and busbar risers with earth switches (RE).
- The cable termination compartments are fitted with Type C bushings suitable for 3-core medium-voltage cable termination using shrouds, unscreened and screened separable connectors.
- Using screened separable connectors it is possible to install two 3-core cables or one 3-core cable with three surge arresters per cable compartment.

FBX-C CCT2 RMU

The FBX-C CCT2 ring main unit, consisting of two load-break fault-make switch disconnectors (C) and a 630A vacuum circuit breaker (T2), is ideal for use in miniature substations or free-standing in a kiosk. A self-powered protection relay provides the protection function for the circuit breaker (T2). The unit has integral cable test facilities that are accessible from the front without having to access the cable compartments.


TRIP BUTTON
CABLE TEST FACILITY
BEHIND COVER



2 Magnet Road

Knights

1413

P O Box 13024

Knights

1413

Tel: +27 (0)11 820-5111

Fax: +27 (0)11 820-5122

email: sg.info@actom.co.za